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From the Shoulders of a Giant: Perspectives on the Legacy of William White Howells (1908-2005)

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ABSTRACT : William White Howells was one of the intellectual giants of the discipline of biological anthropology during the twentieth century. He was a devoted student of Earnest A. Hooton; yet he played a central role in directing the discipline away from the typological thinking that infused the work of his predecessor, and toward the population perspective that characterizes the field today. An original and productive scholar with diverse interests, his influence was extraordinary not merely because of his brilliance, but also because of the kind of mentor he was. Almost two dozen graduate students, and countless others with whom he interacted in various capacities, have carried Howells' legacy into the twenty-first century.

PORTRAIT OF A GIANT

He was an intellectual powerhouse. Quiet. Demure. A gentleman in every way. He was small in stature, but a giant of twentieth century biological anthropology. Actively publishing until the age of 89 and lucid practically to the day of his death at the age of 97, William White Howells (''Bill'' to his friends) had a remarkable career spanning more than six decades. In those six decades, he received two honorary degrees (from Beloit College and the University of the Witwatersrand), the Viking Fund medal, the Broca Pris du Centenaire from the Société d'Anthropologie de Paris, and the American Association of Physical Anthropologists' Charles R. Dar-win Lifetime Achievement Award—one of three made in its inaugural year, 1992. He had served as president of the American Anthropological Association and later received its Distinguished Service award. In 1993, the Biological Anthropology Section of the American Anthropological Association created a William W. Howells Book Prize in his honor. From April 1939 to the spring of 1943, he served as Secretary-Treasurer of the American Association of Physical Anthropologists. From 1949 to 1954, he served as editor of the American Journal of Physical Anthropology. He was a member in the National Academy of Sciences and the American Academy of Arts and Sciences. It took him only 4 years after having begun his graduate study of Anthropology to complete his doctoral dissertation (Howells, 1934). Before doing so, he had published his first Peabody paper (Howells, 1932) and his first monograph (Howells, 1933). In his career, he published seven popular books (Howells, 1944, 1948, 1954, 1959, 1973b,c, 1993), six Pea-body papers (Howells, 1932, 1937, 1966a, 1973a, 1989, 1995), and numerous journal articles and book chapters. He amassed an enormous human craniometric database, which he readily made available to junior as well as senior colleagues upon request, and in 1996, to all scholars via the internet (Howells, 1996). Although his main contributions were in the field of human cranial morphology, Howells' written work probed a much wider range of sub-jects, and his thinking infused virtually all aspects of bio-logical anthropology, including human population biology, genetics and ecology, primatology, and paleoanthropology (Friedlaender, 2007; Giles, 2007; Jurmain and Godfrey, 2007; McHenry and Delson, 2008). One of his books, ''The Heathens,'' is still earning quarterly royalties for Howells' descendants, well more than half a century after it was published (1948).

His career has been celebrated twice, first with a Festschrift volume published shortly after his 1974 retirement from Harvard and edited by two of his students (Giles and Friedlaender, 1976; Giles et al., 1976), and second, at a Wiley-Liss symposium at the 2007 annual meeting of the American Association of Physical Anthropologists, organized by two of Howells' students, Robert Jurmain and myself. The latter featured contributions from some of Howells' academic ''grandchildren'' (J.Y. Anderson, J.B. Gaines, C. Gilbert, M. Sockal), as well as prior students still active in the field, both graduate (C. Loring Brace, John Fleagle, Jeffery Froehlich, Eugene Giles, Laurie Godfrey, Jonathan Friedlaender, Henry Harpending, Robert Jurmain, Henry McHenry, Peter Rodman) and undergraduate (e.g., Eric Delson, G. Philip Rightmire). I borrowed the title for this Yearbook tribute to Howells from that of our 2007 Wiley-Liss symposium (Jurmain and Godfrey, 2007).

Howells was a student of Earnest Albert Hooton, and his successor at Harvard when Hooton died in 1954 (see Giles, 1999, for a review of Hooton's life). He clearly admired Hooton. Indeed, in his 1992 autobiographical memoir, he professed great respect for all of his professors at Harvard, including, in addition to Hooton, Alfred Marsten Tozzer, and Roland Burrage Dixon (author of ''The Racial History of Man,'' 1923). He was reticent to call any of these men ''racist''; in fact he claimed other-wise, although he renounced their typological thinking. (He made scant mention of the more sordid consequences of such approaches, e.g., Hooton's fervent eugenicism; for a historical review, see Rafter, 2004). Of Dixon, Howells (1992, p 2) remarked, ''His erudition was enormous''; students would exit his lectures ''with sore tendons'' but satisfied with the wealth of information imparted to them. He praised Tozzer for his breadth, wit, organization, and pleasant style of oral delivery (even if he might write on the blackboard ''in a hand that did not distinguish well between i's or o's or n's or u's'') (Howells, 1992, p 1–2).

Howells reserved his most lavish praise for Hooton. Hooton was, according to Howells (1992, p 2), ''a phenomenon'' with a selfless, magnanimous temperament and a ''gift for the vivid and the comic.'' Hooton was the person who had inspired Howells to abandon any thought of a career in literature, and become, instead, an anthropologist. He was president of the American Association of Physical Anthropologists (1936–1938) when Howells attended his first AAPA meeting (Alfonso and Little, 2005), and Hooton was very much an advocate for the young prodigy. It was Hooton who had effectively launched Howells' book publishing career, first by encouraging Howells to write for a general audience, and then by convincing a reluctant publisher to accept Howells' manuscript. Howells (1992, p 3) recounted the amusing story of how his manuscript was first summarily rejected by his publisher, but then Hooton ''read it over and on his own hook advised the publishers to reconsider it. Properly awed, they told me they had heard from Hooton how much my book had been improved [it had scarcely changed], and requested another look.'' Thus was born Howells' (1944) first popular book, Mankind So Far. Howells (1992, p 4) added, ''It is commonly said that a whole generation of physical anthropologists was ''trained by Hooton.'' This does not sound right: If there had been more coaching, his students would have tended more to follow parallel tracks. Instead, they set off in many directions. As he said him-self, he was pleased that none of them were yes-men.'' Hooton, according to Howells, ''educated,'' but did not ''train,'' his students.

Howells was one of those maverick students who never embraced Hooton's approach to skeletal biology. He had tested his predecessor's typological approach on cranial series from Ireland and Melanesia, and he disclaimed any brilliance for having rejected it. He wrote in his memoir (Howells, 1992, p 7): ''I was dubious about dissecting populations [into ''pure types''], having some idea of normal variation. I take no

credit for this; it was a limitation that seemed to enforce itself.'' Instead, he credited William C. Boyd (1950) with fueling his conversion to population thinking. Boyd, Howells (1992, p 11) remarked, was a ''mild and pleasant man'' who nevertheless ''minced no words in plowing under simpler ideas of multiple races, with their supposedly clear edges and long persistence, as well as any and all ideas of type.'' He added that Boyd was ''a major force in civilizing the unreconstructed (myself included), even if his effect was not instantaneous.''

Howells' focus was on the history of populations, not races—he had repudiated Dixon's and Hooton's search for primeval parent races—the ''pure'' stocks that were presumed to have existed in the past. Although he credited Hooton with an interest in population variation, he noted that Hooton's mission, as exemplified by his monumental study of skulls from the Pecos Pueblo (Hooton, 1930), was fundamentally flawed. First, Hooton divided cranial series into ''impressional types'' and then attempted to validate the distinctiveness of those types statistically. As Howells (1992, p 7) remarked, ''Given the process of selection, it is not surprising that the statistics appeared to support the distinction among types.'' To Howells, the failure of the typological approach resided not merely in its faulty problem construction, but in the lack of methodological savvy of its practitioners. Hooton had embraced statistics but failed to understand them well, while others, notably Hrdlička, detested statistics and refused to let them challenge an entrenched world view (Howells, 1992, p 8).

In sharp contrast stood Boas, Pearson, and Fisher. Howells was inspired by Boas' (1912) demonstration of cranial responses to environmental change (based on his observation that American-born children of immigrants differed substantially in cranial shape from their European-born parents). Whereas it is now recognized that Boas (1912) overstated his case for single-generation, environmentally induced plasticity of skull shape (see critique by Sparks and Jantz, 2002), his basic insight was fundamentally correct. Subsequent studies of human migration, using increasingly sophisticated methodologies, have proven that environmental factors do impact human growth, development, and adult skeletal form (Mascie-Taylor and Little, 2004; Relethford, 2004). Boas' analytical failings notwithstanding, his role in steering physical anthropology away from racist, typological thinking and toward a multifaceted research pro-gram that seeks to understand skeletal variation within its genetic, medical, and cultural contexts, was pivotal. Howells was a beneficiary of that paradigm; he under-stood that skeletal variation reflects population heritage, but also that change in skeletal form over time should reflect some combination of phenotypic plasticity, Darwinian adaptive selection, gene flow, and drift (e.g., Howells, 1966a). More than most of his contemporaries, he appreciated that population variation is at least as interesting as any measure of central tendency.

In effect, Howells was a pioneer in *applied* statistics, asking questions that had never been asked before, and choosing his techniques skillfully and effectively to make the data confess. Discriminant function analysis was his tool of choice for describing differences among populations, and factor analysis to describe within-population variation.

His key methodological contributions (e.g., Howells, 1957, 1966b, 1969) dealt with the concepts of size and shape in the cranial vault, the meaning and measurement of population ''distances'' (biological, linguistic, geo-graphical, and environmental), and the use of multivariate techniques in studying skeletal populations. Howells was drawn to statistics early in his career. In 1936, he teamed with Harold Hotelling (a brilliant young statistical economist who would later contribute a multivariate version of the two-group

T test—Hotelling's T^2 statistic—and a multivariate extension of Pearson's coefficient of correlation, canonical correlates analysis) to explore differences between the pelves of males and females in the American Southwest (Howells and Hotelling, 1936). As a young professor, he saw the potential of multivariate techniques for skeletal paleobiology; Barnard (1935) had used discriminant function analysis to decipher differences among four series of Egyptian skulls, and Rao (1948) had used it to assign a particular skull (High-down) to its proper time period (between British Bronze Age and Iron Age samples). Convinced that multivariate statistics would become the ''primary means of analyzing biological material, including human crania, in population terms, above all, in locating the essential aspects of variation in continuous traits both within and between populations,'' Howells (1973a, p vii) was determined to develop his own competence in its application. It mattered little that, during the 1940s and 1950s, most computation had to be done by hand. In 1951, while at the University of Wisconsin, he sought the help of statistician Chester W. Harris in applying factor analysis to his data (Howells, 1957). Then in 1959, back at Harvard, two of Howells' students, Orville Sherman Elliot, Jr. and Eugene Giles, used discriminant function analysis to explore population and sex differences in the cranium (Giles and Elliot, 1962, 1963). Their success prompted Howells (1966a) to use the technique to quantify the differences between Japanese and Ainu skulls, and to assess the affinities of Jomon skulls.

This led to the first of what has come to be known as Howells' ''trilogy'' of Peabody Papers (Gaines and Rightmire, 2007), featuring various multivariate techniques as tools for quantifying the degree of variation within populations, capturing distances between single skulls and populations, and capturing changes over time.

The first of the trilogy was Howells' classic 1973 study of 17 cranial series; he applied discriminant function analysis, in combination with factor analysis, to discover whether population differences might ''rest on the same factors, supposedly genetic, which differentiate individuals within a population'' (Howells, 1973a, p 43). His conclusion reached 100 pages later, that ''evidently they do'' (1973a, p 143), was revolutionary. Population differences are mere extensions of differences among individuals.

In 1989, a good 15 years postretirement, Howells published the second of the trilogy—an extension of 1973 study based on 28 cranial series, selected to represent major geographic regions as well as local distinctive populations. Arguably, this was his most important contribution to the literature. His goal here was to derive a ''comparative description of the several populations, such as might be useful in problems of the origins of recent humanity in general'' (Howells, 1989, p 1). A central issue was his desire to control for size differences when comparing cranial shapes. Howells (1989) addressed the problem by using intuitive standardization procedures. He calculated the means of individual Z-scores (PEN-SIZE), and then recentered individual Z-scores by subtracting individual PENSIZE values, so that the deviations summed to zero. This was part of the theory that anticipated the separation of size and shape in geometric morphometrics, which in turn blossomed with the advent of cheap, powerful computing. In doing this, Howells was able to characterize the manner in which populations vary in shape independently of size differences that might be easily selected. He concluded that modern humans show only minor shape differences, and that the constellation of shapes that include modern humans ''cannot accommodate skulls greater than ca. 35,000 years'' (Gaines and Rightmire, 2007, p 112). This became Howells' signature argument.

This study depended on a huge amount of data collection, which Howells accomplished himself with the assistance only of his wife, Muriel Seabury Howells. In the preface to his 1989 monograph, he acknowledged her help: ‘‘I can only say that she wrote down something like a hundred and seventy thousand numbers with accuracy, patience, fortitude, and plain good humor .... She disproved the theorem that dull jobs are best done by dull minds by somehow discovering how to read French novels with one half of her mind, while catching my slips and errors ... with the other half. If she had not found such a palliative, while I was shifting a skull around and fussing over a difficult measurement ... I do not see how she could have emerged with her sanity.’’

Howells’ 1995 monograph was the last of the trilogy; here, Howells used distances derived from canonical variates analysis for ethnic identification. First, he affirmed the utility of multivariate statistics in being able to identify population affiliation of particular ‘‘unknown’’ (i.e., test) skulls. He then used his modern skull dataset as a framework to test the affinities of prehistoric skulls. Once again he showed that late prehistoric specimens, including Neanderthals and African ‘‘archaics,’’ fall out-side the range of modern human variation. And within that modern human variation, Howells (1995, p 103) stated unequivocally, ‘‘There are no races, there are only populations.’’

LEGACY OF A GIANT

As a professor, Howells was the embodiment of the traits he found endearing in his own mentors: He was an educator, not a trainer. He had a gift for lecturing, and he used metaphor creatively. Umbrella parts (rods and spokes) might serve him well to illustrate the axes of factor analysis; the candelabra might represent Weidenreich’s concept of multiregional evolution; ‘‘Noah’s Ark’’ might be used to evoke replacement models such as ‘‘Out of Africa.’’ He was mild-mannered but dynamic—adored by his students in the classroom and throughout his postretirement years.

At Harvard, nearly two-dozen doctoral students completed their dissertations partly or entirely under Howells’ guidance (Table 1). Because of the diversity of his own research interests, but also because he truly believed that students should be accorded enormous freedom to pursue individual goals, he mentored students in virtually every subdiscipline of biological anthropology. Many of these students can be pigeonholed no more easily than can Howells himself. Howells never demanded conformity; he merely opened doors. Uniformly, however, he held his students to a high intellectual standard, and led by example. His influence extended far beyond his advisees, as he served on many committees, and freely counseled students on whose committees he did not serve.

Paul Baker (PhD, 1956, pioneer in the study of human adaptability and biological responses to stress, modernization, and acculturation) was Howells’ first student at Harvard. He had begun his studies under the tutelage of Earnest Hooton, but Hooton died before Baker had completed his dissertation, and Howells effectively inherited him. Baker was also the first of many of Howells’ students to go on to earn accolades of his own. He and two other Howells’ students (Edward I. Fry and Eugene Giles) served as president of the American Association of Physical Anthropologists. Paul T. Baker, Eugene Giles, and one other Howells student, C. Loring Brace, like Howells himself, were granted a Charles R. Darwin Life-time Achievement Award.

Many, but not all, of Howells’ students pursued careers in academe or in the health profession. Mary Anne Whelan became a medical doctor; Arthur Vincent Lombardi a dentist. Others entered the private

sector (e.g., Thomas Mercer-Hursh established his own computing consultation business, and John Rhoads became a medical soft-ware design engineer). Several (David Agee Horr, Gloria y'Edynak and Albert P. Santaluca) taught for awhile before entering the private sector.

We, students of Howells, were heirs to a new paradigm in biological anthropology, and we understood and appreciated the role our mentor had played in its construction. So well were we taught the vacuous circularity of first dividing a series of objects (no matter what) into ''types,'' and then using statistics to ''confirm'' their distinctive-ness, that we could hardly fathom how anyone could have been so naïve. We were the inheritors of a population-based science, one that embraced the power of genetics and evolutionary theory to elucidate population history, one that used multivariate techniques as a means to capture the complex inter-relationships among traits and to explore the similarities as well as differences among populations, or to probe the environmental and cultural contexts of morphological variation. We were expected to draw upon data from all fields of anthropology to illuminate aspects of our evolutionary past or present diversity. Anthropometry was no longer the centerpiece of physical anthropology, and to the extent that it was still useful, its purpose (to capture variation) had shifted. Discovering ancestral ''types'' was emphatically not our goal. Gaining expertise in multivariate statistics was our obligation. As Brace (2007) put it, ''His own students felt that a demonstration of competence in factor analysis was absolutely *de rigeur*.'' But he insisted that mastering multivariate concepts required neither special mathematical aptitude nor ''demanding previous servitude in advanced math'' (Howells, 1992, p 14). Howells made Harvard's Department of Anthropology a comfortable place to learn such concepts.

Of course, Howells was never alone in mentoring students of biological anthropology at Harvard, and other faculty must be given credit for their contributions to the department's intellectual environment. In the early years of what might be called the ''Howells epoch'' of bio-logical anthropology at Harvard, the team included Edward Eyre Hunt, Jr. and George Emil Erikson (''Erik''). Hunt had received his doctorate in 1951, and after a brief interlude at the University of Melbourne, joined the Department of Anthropology at the Peabody Museum, where he became a revered educator and leader in the fields of human growth, health, and human reproductive biology (Baker, 1992). Hunt and Howells had much in common. Like Howells, Hunt had earned his doctorate under Hooton's guidance, but again like Howells, he understood the concept of normal variation and embraced statistics as a tool to elucidate variation. Like Howells, he was interested in process, not description for its own sake. Hunt left Harvard in the mid-1960s for Hunter College, and afterward, Pennsylvania State University. He was honored in 1993 by the Human Biology Association, which established the Edward E. Hunt, Jr. Student Prize in his memory (Little and James, 2005).

TABLE 1. Howells' students at Harvard

Name, main academic affiliation (when applicable), and specialization	PhD year	Dissertation title
Paul Thornell Baker, Pennsylvania State U, Human Population biology.	1956	Man in the Desert: A Study of the Racial and Morphological Factors in Man's Tolerance of Heat.
Edward Irad Fry, Southern Methodist U, Dallas, Human biology, skeletal biology.	1958	Growth and Health in Cook Island.
Charles Loring Brace, U Michigan, Ann Arbor, Paleoanthropology.	1962	Physique, Physiology, and Behavior: An Attempt to Analyse a Part of their Roles in the Canine Biogram.
Hermann Karl Bleibtreu, U Arizona, Biosocial anthropology.	1964	Marriage and Residence Patterns in a Genetic Isolate.
Eugene Giles, U Illinois, Champaign-Urbana, Anthropological genetics, forensics.	1966	A Genetic Study in the Markham Valley, Northeastern New Guinea.
Howard Leslie Bailit, U Connecticut Health Center, Farmington. Dental anthropology, health policy and health services research.	1967	The Influence of the Prenatal Environment on the Human Dentition.
Melvin King Neuville, U California, Davis, Primatology.	1967	A study of the Free-Ranging Behavior of the Rhesus Monkeys.
Orville Sherman Elliot, Jr, U Victoria, Primatology.	1969	A Biology of Tree Shrews: With an Emphasis on *Tupaia glis* (Diard 1820) of Malaya.
Jonathan Scott Friedlander, Temple U, Human biology, population genetics.	1969	Biological Divergences over Population Boundaries in South-Central Bougainville.
David Agee Horr, Brandeis, Primatology.	1969	Communication and Behavior of the Slow Loris (*Nycticebus coucang*).
Henry Wade Seaford, Jr, Dickinson College, Human musculature, cultural context of facial expression.	1971	The Southern Syndrome: A Regional Patterning of Facial Muscle Contraction.
Henry Cosad Harpending, U Utah, Population genetics.	1972	Kung Hunter-Gatherer Population Structure.
Henry Malcolm McHenry, U California, Davis, Paleoanthropology.	1972	The Postcranial Skeleton of Early Pleistocene Hominids.
Frank Philip Saul, Medical U of Ohia, Toledo, Forensics.	1972	Disease and Death in an Ancient Maya Community: An Osteobiographic Analysis.
Mary Anne Whelan, Pediatric neurology.	1972	The Bulk of the Measured: Sibling Correlations in Selected Measurements of Growth and Their Application to the Problem of Relative Growth Failure.
Jeffrey Wayne Froehlich, U New Mexico, Albuquerque, Primatology, population biology, paleoanthropology.	1973	The Usefulness of Dermatoglpyhics as a Biological Marker of Human Populations in Melanesia.
Arthur Vincent Lombardi, Dentistry.	1973	Tooth size, tooth form, and craniofacial dimensions.
Gloria Jean y'Edynak, Skeletal biology.	1974	Demographic Change and Population Continuity in Central Yugoslavia from Prehistoric to Medieval Times.
Thomas Mercer-Hursh, Biometrics.	1975	A Multivariate Study of Chimpanzee and Gorilla Crania.
Robert Douglas Jurmain, San Jose State U, Skeletal biology.	1975	Distribution of Degenerative Joint Disease in Skeletal Populations.
Laurie Rohe Godfrey, U Massachusetts, Amherst, Primate paleontology.	1977	Structure and Function in *Archaeolemur* and *Hadropithecus* (Subfossil Malgasy Lemurs): The Postcranial Evidence.
John Garrett Rhoads, Yale U, Population biology, population genetics and demography	1977	Genetics, Growth, and Microevolution: The Structure of Geographic Variation in Solomon Island Populations.
Albert P. Santaluca, U Texas, Dallas, Paleoanthropology.	1977	A Comparative Study of the Ngangdong Fossil Hominids.

Erikson was a man of eclectic interests. His main expertise was in anatomy, but his undergraduate concentration was entomology, and his interests included medical illustration and the history of science (especially the biographies of anatomists). Late in his career, he founded an independent archival, biographical institute. He published little but was an enthusiastic lecturer, and it was in that arena that he influenced some of Howells' early students. As a former student of Harvard paleontologist Alfred S. Romer with field experience in Central America, he brought to the Department of Anthropology expertise in primatology as well as vertebrate anatomy. Upon completing his dissertation in 1948 on the morphology of the forelimb of capuchin monkeys, Erikson was hired to teach histology, gross anatomy, and clinical anatomy in Harvard's Medical School and a course on Primates and their Anatomy in the Department of Anthropology. He taught art at the Mass General Hospital School of Medical Illustration, and history of science as a guest lecturer in diverse departments at Harvard and at Brown University, including German, Classics, History of Science and Medicine, Engineering, and Law. Erikson remained at Harvard until 1965, when he moved to Brown University's School of Medicine.

Albert Damon joined the anthropology department at around the time that Hunt and Erikson left. In 1964, he became Curator of Medical Anthropology, a position he held until his death in 1973 (Howells, 1973d). Damon was the founder of Engineering Anthropology and, with Howells' early support and later direct participation, leading formulator of the Harvard Solomon Islands Project, a truly interdisciplinary endeavor (first involving sociocultural anthropologists Eugene Ogan and Roger Keesing, and Lot B. Page, a medical doctor from Massachusetts General Hospital, and later involving ethnographer Douglas Oliver and many others). Assisting on the Solomon Islands project were a number of Howells' students, including Eugene Giles (who, in 1966, had just returned from completing his own fieldwork in New Guinea), Jonathan Friedlaender (who would later devote his career largely to the study of the biological diversity of the people of the Solomons and Island Melane-sia), Howard Bailit, Arthur Vincent Lombardi, and programmer John Rhoads (see Friedlaender, 1987). Eugene Giles became an assistant professor in the Anthropology department between 1966 and 1970, after which he departed for a post at the University of Illinois, Urbana-Champaign. Primatologist Irven DeVore joined the Department of Anthropology as a Lecturer in 1964, and began mentoring his own graduate students in 1966–1967 when he became a professor in the department. DeVore urged his students to study nonhuman primates in their natural habitats, and many became prominent field primatologists (Kelley and Sussman, 2007). Many, including Peter Rodman, John Fleagle, Melvin Konner, Sarah Blaffer Hrdy, and others, also took courses with Howells.

Meanwhile, multivariate statistics were becoming more accessible and more widely embraced across disciplines. The Department of Statistics at Harvard University was founded in 1957; its first departmental tea and colloquium featured one of Howells' statistical heroes, Ronald A. Fisher, speaking on ''The Underworld of Probability.'' The department's inaugural staff included Charles Frederick (''Fred'') Mosteller and William G. Cochran (Fisher's colleague at the Rothamsted Agricultural Experiment Station and codeveloper of Analysis of Variance). Mosteller was its chair. He later chaired the Department of Biostatistics at the Harvard School of Public Health, and was instrumental in bringing statistics to the forefront of health and public policy. In a paper that remains a classic in the statistical literature, Fred Mosteller teamed with David Wallace from the University of Chicago to decipher which of the disputed Federalist papers were written by Madison and which by Hamilton (Mosteller and Wallace, 1963). Multivariate statistics (in this case, discriminant function analysis combined with Bayesian analysis) were not merely broadly useful; they could be downright fun.

Figure 1. Portrait of William White Howells taken at the estate built by his aunt, Amelia Elizabeth White, now the School of American Research, Santa, Fe, New Mexico. Photo credit: Muriel Howells.

Figure 2. Bill Howells with local resident in the highlands of New Guinea, 1962. Photo credit: Muriel Howells

By the time Howells was nearing retirement, Harvard had become a thriving center of cross-disciplinary exchange of ideas. Anthropology was very much an integrated, four-field discipline, and biological anthropology had developed strong ties with evolutionary biology, bio-mechanics, ecology, and vertebrate paleontology. In close physical proximity to the Peabody Museum was the Museum of Comparative Zoology; one need only take a delightful walk past the glass flower exhibit on the third floor of the MCZ, and then climb or descend the stair-case, to find the offices of Stephen Jay Gould, Ernst Mayr, or Bryan Patterson. Stephen Gould was, at that time, a vibrant young professor of invertebrate paleontology, coteaching seminars (just as vertebrate paleontologist George Gaylord Simpson had done before him) with established ornithologist Ernst Mayr, one of the great architects of the New Synthesis in evolutionary theory. Gould's ''Problems in Invertebrate Paleontology'' was a foray into multivariate statistics, brilliantly complementing (but with a strikingly different style) Howells' instruction on the same subject. (Howells was always the gentleman; Gould was willing to climb atop tables to catch the attention of students if necessary.) Bryan Patterson was an extraordinarily erudite and largely self-educated vertebrate paleontologist, best known among anthropologists for his discovery at Kanapoi of a distal humerus that was later determined to belong to *Australopithecus anamensis*. One of Bryan Patterson's students was Anna ''Kay'' Behrensmeyer, later a member of the team of scientists that discovered the footprints of *Australopithecus afarensis* at Laetoli, and a pioneer in the field of taphonomy. Behrensmeyer was able to work successfully on a doctorate at the intersection of Geology, Biology, and Anthropology. The new science of taphonomy demanded such cross-fertilization.

Not far from Ornithology and Geology were the laboratories of functional morphologists Farish Jenkins and A.W. Crompton. Farish Jenkins' cineradiographic analysis of chimpanzee bipedalism and his research on the functional anatomy and evolution of the mammalian elbow were of great interest to students of anthropology, as was the joint work of Crompton and Jenkins on the evolution of tribosphenic molar occlusion. Both used experimental techniques to gain paleontological insights. Crompton came from the Yale Peabody Museum to Harvard in 1970 as Alexander Agassiz Professor of Zoology and Director of the Museum of Comparative Zoology.

There was never a shortage of biological anthropologists around the department. There might be a guest lecture from a visiting paleoanthropologist, such as Phillip V. Tobias, or an entire course taught by a visitor such as Lawrence Angel from the Smithsonian Institution. There was also Richard Thorington (later Curator of Mammals at the Smithsonian Institution), who would come to campus from the New England Regional Primate Center, where he then worked, to teach a dynamite course in Primate Anatomy.

Women were becoming increasingly visible in the discipline of biological anthropology during the 1960s and 1970s, first mainly in primatology (Kelley and Sussman, 2007), but then in skeletal biology and paleoanthropology. Howells' first female student to complete her doctor-ate, Mary Anne Whelan, did so in 1972; Whelan then entered Dartmouth Medical School to become a pediatric neurologist. Two additional women completed their doctorates under Howells' guidance: Gloria y'Edynak finished in 1974, and I did the same in 1977.

Toward the end of his tenure at Harvard, Howells became increasingly hearing impaired. Indeed, by the time he retired, he had already suffered considerable hearing loss in one ear. One of the students in my

cohort, Jeffery Froehlich, inadvertently positioned him-self on the side of Howells' bad ear while taking his oral doctoral language exam. He was more than 5 min into his translation of German into English when Howells turned to him and remarked, ''Whenever you'd like to begin ....''

Figure 3. Bill Howells delivers a lecture entitled "Who the Polynesians were *not*" in the Tozzer Library, Peabody Museum, April 1978. Photo Credit: Daniel W. Jones, Jr.

Figure 4. Bill Howells receives a Lifetime Achievement Award from the American Association of Physical Anthropologists at its annual meeting in Las Vegas in 1992. From left to right: Eugene Giles, Muriel Seabury Howells, and William White Howells. Photo credit: Inga Wikman Giles.

About 10 years after Howells retired (August 9, 1985), he sent a letter to the editor of the *New York Times*, commenting on the sounds that, for the hearing-impaired, drop out of the reception range in some words but appear again in others. He wrote: "My favorite evening television newscaster manages to say ''nightly news'' with no ''t'' at all (he uses what cognoscenti call a glottal stop). By dispensing with many ''t's'' and ''d's,'' he can save a hun ridden 20 seconds in half an hour, which translates into a lot of money."

Howells did have one habit that was not terribly endearing to his students, manifested increasingly as he neared retirement. He often wrote little, if anything, on student papers. Sometimes, he would write only ''This is not up to your standard'' or ''You can do better than this.'' Some of us thought that his lack of commentary signaled disenchantment with the quality of our papers, but that wasn't it, at least not entirely. Once, one of my papers was returned to me with an ''A1'' grade on the cover sheet, and not a single word inside. I would have gladly relinquished the good grade for a little of Howells' critique. Jeffery Froehlich devised a plan to get comments from Howells. Froehlich knew that our mentor, coming from a literary background (with William Dean Howells, long-term editor of *The Atlantic Monthly*, as his paternal grandfather, and Horace White, editor of the *Chicago Tribune* and *New York Post*, as his maternal grandfather), absolutely hated split infinitives. So Jeff would sprinkle split infinitives throughout his papers, hoping to prod Howells to take a closer look. Then occasionally—very occasionally for most of us—Howells would return a paper absolutely covered in red ink (minor corrections, notes regarding references to follow, ideas to pursue). These were the truly superb papers—papers that Howells deemed worthy of publication, and therefore, worthy of attention to the most minute details!

That unevenness notwithstanding, Howells was virtually everything one could want in an advisor. He was smart and incredibly knowledgeable. He was eager to share that knowledge, helpful in finding resources (financial or otherwise) to promote his students' projects, and generous in inviting them to examine original and valuable fossil materials in his possession (McHenry, 2007; McHenry and Delson, 2008). He was elegant, polite, respectful, collegial, modest, entertaining, witty, and most of all, magnanimous. He treated his female students no differently than he treated his male students. He never forgot a favor. I must have done him one because, in 1993, he sent me a signed copy of his latest book, ''Getting Here,'' with the following inscription: ''For Laurie Godfrey with thanks for help in need.'' To this day, I cannot remember what help I had accorded him.

Howells' magnanimity is perhaps best exemplified by what happened on one summer day when Tom Mercer-Hursh (then Tom Hursh) was drafting maps of the South Pacific for an upcoming Howells publication, and Howells, at a nearby table, was examining a plaster cast of a *Homo erectus* from China. The original specimens from Zhoukoudian had been lost in the war, and these casts were all that remained. In a letter read on the occasion of the 2007 AAPA symposium in celebration of Howells' career (Jurmain and Godfrey, 2007), Tom described the events that transpired shortly after Howells had left for lunch and Tom had mounted his camera to take photos of his maps:

We had all the windows open, since it was a hot summer day in Cambridge and it was mostly a very still day, but while I was taking the photos a sudden breeze came up and blew over the drafting table, which presented a sail-like profile in the vertical position, apparently without sufficiently stable legs. Somehow the metal jacketed corner of the table came down directly on the cast. These casts were made with very

fine plaster, which had been poured into the mold in small quantities and swirled around to set, resulting in four or five thin layers, not more than about a quarter inch thick total in many places and a hollow center. The impact of the table not only shattered the whole crania into thousands of pieces, but it even shattered the layers apart in many places so that near the point of impact there might be four separate pieces for any one point.

Tom thought his graduate career was over, but when Howells returned from his lunch, he took full blame for having left the specimen on the table unattended. At Tom's pleading, Howells granted him permission to try to put the cast together again, and, when he succeeded at the job, Howells hired Tom first to remove Mugharat Es Shkul specimens from their matrix for casting by Wenner-Gren, and then as a part-time conservator and preparator in the Osteology Laboratory. In the end, the incident that Mercer-Hursh had expected would destroy his graduate career (and might well have done so had Howells been a lesser man), resulted in Mercer-Hursh's becoming Howells' trusted laboratory aide. That, he acknowledged, said a lot more about Howells than it said about Tom.

Peter Rodman shared this story at our Wiley-Liss symposium dinner in 2007:

I was probably in my first year of graduate study and aimed to pass my exam in French. To do this, I asked Howells to give me an oral translation exam. We sat in his office and he handed me a book from which to trans-late French to English. When I stumbled over a word and he became very slightly impatient, he encouraged me by advising, ''It's simple, Peter. Just think of the Greek!'' I suppose it was flattering that he thought this might help me, but, unlike Howells, I knew no Greek. His elegant classical education came from a different era, when an educated person would know both Latin and Greek. He was helpful and forgiving, and I passed the exam-not with flying colors, but I passed.

At the Wiley-Liss 2007 Memorial Symposium session, Eugene Giles (2007) shared one of his earliest experiences with Howells. Giles was as a new graduate student, enrolled in Howells' introductory course in osteology, when, ''Bill explained at length the difficulty of spelling the word sagittal, that suture running lengthwise along the top of the skull, and that one must remember that it has two ''g's'' and one ''t.'' But it doesn't; it has one ''g'' and two ''t's.'' After class several of us debated whether we should bring this up with him, or let it go, for our own sakes. We decided to tell him, and he received the correction with such good humor and warmth that we knew that he was very okay and we'd be all right.''

It is fitting to end with the words of Sarah Blaffer Hrdy, a student of Irven DeVore who had enrolled in only a single graduate course (on human evolution) with Howells, but who nevertheless professes a great intellectual debt to him. On the occasion of our 2007 celebration of Howells' career, Hrdy commented on her professional relationship with Howells, built largely after he had retired:

If he was traveling around the world and encountered an article related to my work, he sent it along with a note. In an era where mentors for women were rare in Biological Anthropology, the advice from this admired man with whom I had never had an official connection—always kind, always astute, sometimes pointed—was enormously appreciated. ... He wasn't just a great anthropologist, he was the entire package: scholar, writer, teacher, wonderful husband, father, citizen, gentleman and philanthropist. A man just too cool for words.

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